DEVON RIVER AUTHORITY

RIVER EXE SCALE READING INVESTIGATION

7TH ANNUAL REPORT FOR THE 1972 SEASON

The continuing object of this investigation is to examine, by means of scale reading, the biology of age classes of the salmon population of the River Exe. The report is arranged in five sections and tables referred to in the report form an appendix, with the exception of Table 1 which is included in the text on page 2.

A - METHODS
B - THE NET COLLECTION
C - THE ROD COLLECTION
D - GENERAL
E - DISCUSSION

A. METHODS

Scales were collected from fish taken during the normal open seasons which were in 1972:

Nets (1) Upper Reaches - 16th April to 16th August
(2) Lower Reaches - 14th February to 16th August

Rod and Line - 14th February to 30th September.

A weekly close time was in operation for the nets, a period of forty-eight hours from 6 a.m. on Saturday to 6 a.m. on the following Monday.

Eighteen licences were issued for seine nets in 1972. Seventeen were fished in the estuary and one in tidal waters in Exeter. Scale samples were sent in by the netsmen themselves.

Samples from rod caught fish were submitted by anglers, whose continued co-operation is greatly appreciated.

To increase the scale samples from rod caught fish, scales were taken from dead U.D.N. fish found during the fishing season.

Number of Scales Collected

1,195	(1,018)	Sets were collected from NET caught fish.
47	(55)	Sets were collected from ROD caught fish.
187	(123)	Sets were collected from DISEASED fish in fresh water.
1,429	(1,196)	Totals for the 1971 season are shown in brackets.

Examination of the Material

The techniques of mounting, projecting and reading the scales were the same as those used in the four previous years.

Some sets of scales were received which could not be accurately read, or the readings could not be used. These were discounted from the totals used for statistical analysis.

B. THE NET COLLECTION

Examination of Table 1 shows that scales were collected from 36.4% of the fish declared in the returns as having been landed during the 1972 season.

Sampling efficiency was very good with the exception of July and August. It is hoped that netsmen and rodsmen will maintain their sampling effort, particularly in the latter half of the season.

It is important for the proper management of stocks in the river, which benefits both netsmen and anglers alike, to find the composition of the catch in terms of year classes.

Table 1 Comparison between Monthly Net Catches Reported and Scale Sample Received from Net Caught Fish

Month	Number Caught		Scales Collected		% Sample	
February	98	(54)	48	(32)	49.0	(59.3)
March	432	(173)	185	(95)	42.8	(54.9)
April	587	(342)	236	(216)	40.2	(63.2)
May	666	(598)	266	(299)	39.9	(50.0)
June	591	(526)	239	(222)	40.4	(42.2)
July	667	(420)	173	(132)	25.9	(31.4)
August	244	(154)	48	(22)	19.7	(14.3)
Total	3,285	(2,267)	1,195	(1,018)	36.4	(44.9)

Totals and percentages for 1971 are shown in brackets.

Tables 2, 3, 4 and 5 in the Appendix set out the statistical form of the net collection and from these it can be seen that:

(i) the majority of the fish taken were small spring fish (2 years at sea),

(ii) grilse were the next largest group but were only 24.2% of the fish caught,

(iii) very few small summer fish were recorded in 1972,

(iv) there was a marked increase in the numbers of large spring fish from 0.3% in 1971 to 8.1% in 1972,

(v) previous spawners were found in a smaller proportion than in the years before 1970,

(vi) the largest and smallest fish in each group are comparable with previous years.

Year Class	Smallest	Largest
1+ (Grilse)	3¼ lbs (11.7.72)	11½ lbs (29.6.72)
2 (Small Spring Fish)	4 lbs (26.4.72	20¾ lbs (28.6.72)
2+ (Small Summer Fish)	5½ lbs (4.7.72)	15½ lbs (2 fish - June & August)
3 (Large Spring Fish)	8½ lbs (19.4.72)	28½ lbs (26.6.72)
Sm (Previous Spawners)	17 lbs (29.6.72) one fish only	

The headings 'Smallest' and 'Largest' refer to weight.

The average weights of net caught fish are scheduled as follows: (Previous years' figures provide a comparison).

	1967	1968	1969
1+	6.9 lbs (31)	5.4 lbs (5)	5.6 lbs (68)
2	9.8 lbs (288)	8.8 lbs (119)	8.3 lbs (189)
2+	10.7 lbs (50)	10.2 lbs (3)	11.2 lbs (10)
3	16.9 lbs (57)	13.9 lbs (22)	15.0 lbs (16)
Sm	14.9 lbs (6)	12.0 lbs (10)	15.4 lbs (6)

	1970	1971	1972
1+	5.75 lbs (250)	5.5 lbs (109)	6.25 lbs (217)
2	8.95 lbs (303)	8.9 lbs (847)	9.9 lbs (817)
2+	10.29 lbs (52)	10.2 lbs (57)	10.9 lbs (53)
3	15.0 lbs (7)	13.3 lbs (3)	15.5 lbs (107)
Sm	12.8 lbs (5)	10.0 lbs (2)	17.0 lbs (1)

(The numbers of fish used for calculating the average weights are shown in brackets).

Time of Run

Table 3 and Figure 2 show distribution of runs of sea-age classes during the season.

The runs of each group are comparable with previous years - small spring fish being predominant, with the run showing from the opening of the season through to July and peaking in May. Grilse were sampled from May to the close of the net season. The minority groups, large spring, small summer and previous spawners, were sampled throughout the same periods as recorded in previous reports.

C. THE ROD COLLECTION

Of the 234 sets of scales in the rod collection 47 were caught by rods and the remaining 187 were taken from U.D.N. fish found dead (in the fishing season) by the bailiffs.

Scales from dead U.D.N. fish, found during the fishing season, were added to the scales from rod caught fish to increase the size of the sample.

Average Weights of Year Classes

	1967	1968	1969
1+	5.7 lbs (5)	4.8 lbs (8)	5.3 lbs (12)
2	9.2 lbs (179)	8.8 lbs (141)	8.8 lbs (292)
2+	7.0 lbs (5)	11.2 lbs (3)	10.6 lbs (24)
3	14.5 lbs (105)	13.1 lbs (33)	14.2 lbs (68)
Sm	12.3 lbs (3)	14.2 lbs (8)	11.0 lbs (4)

	1970	1971	1972
1+	3.5 lbs (1)	5.25 lbs (2)	4.6 lbs (4)
2	7.9 lbs (197)	7.8 lbs (171)	10.0 lbs (197)
2+	8.0 lbs (12)	10.3 lbs (3)	9.9 lbs (8)
3	12.32 lbs (14)	14.6 lbs (2)	14.8 lbs (25)
Sm	12.1 lbs (10)	17.0 lbs (1)	- -

(The numbers of each year class in the samples used for calculating the average weights are shown in brackets).

The following Tables A and B show the proportions from A - Rod caught fish and B - Samples taken from dead U.D.N. fish.

Table A

Monthly Distribution and Average Weights			
Class / Month	2	3	Total
February	27	6	33
March	9	1	10
April	4	-	4
May	-	-	-
June	-	-	-
July	-	-	-
Total	40	7	47
Total Weight	372½	102¼	474¾
Av. Wt.(lbs)	9.3	14.6	10.1

Table B

Monthly Distribution and Average Weights					
Class / Month	1+	2	2+	3	Total
February	-	-	-	-	-
March	-	13	-	4	17
April	-	88	-	10	98
May	-	46	-	2	48
June	2	10	6	2	20
July	2	-	2	-	4
Total	4	157	8	18	187
Total Weight	18½	1,596	79½	267½	1,961½
Av. Wt.(lbs)	4.6	10.2	9.9	14.9	10.5

The sample from rod caught and U.D.N. fish is considered to be too small to be statistically viable. The tables are presented to show they follow the same trends as the net collection.

D. GENERAL

Examination of Table 4 shows that, as in previous years, 2-year smolts make up more than 90% of the sample.

Although the number of fish taken by nets in 1972 was the highest recorded since scale reading began in 1966, it would appear that the increased catch could not be attributed to any one group of fish. The only group that shows any significant change is "large spring fish" which was 8.1% of the catch. This particular group has been scarce since 1968.

E. DISCUSSION

It is now further established that the smolt run of 1969 was good from the survival point of view with a good grilse crop in 1970, a good proportion of small spring and summer fish in 1971 and this year a good crop of large spring fish. It is hoped to continue the Exe scale reading investigation to monitor changes in salmon runs which may be affected by U.D.N. and high-seas netting - in the latter case such information may assist the Ministry of Agriculture, Fisheries and Food.

The present investigation attempts to cover only fish which run into the rivers and are caught in the normal open season.

ACKNOWLEDGEMENTS

The assistance of all rodsmen and netsmen participating in this investigation is greatly appreciated and their continued co-operation will be most valuable.

REFERENCE

Reports on the six previous seasons' work on this river, reports for other rivers and copies of the River Exe Fisheries Survey, 1966/67/68/69/70/71 are available on application to the Fisheries Officer.

F.J. NOTT
Fisheries & Pollution Prevention Officer

January, 1973

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Table 2 Sea-Age Classes and Weights - Nets

Class	Scale Sample	% of Total	Total Weight of Class(lbs)	% of Total
1+	217	18.2	1,356.5	11.6
2	817	68.4	8,104	69.2
2+	53	4.4	576.5	4.9
3	107	8.9	1,665	14.2
Sm	1	.1	17	.1
Total	1,195	100.0	11,719	100.0

Table 3 Monthly Distribution of Sea-Age Classes - Nets

Class / Month	1+	2	2+	3	Sm	Total
February	-	30	-	18	-	48
March	-	162	-	23	-	185
April	-	218	-	18	-	236
May	-	235	8	23	-	266
June	62	145	12	19	1	239
July	117	25	25	6	-	173
August	38	2	8	-	-	48
Total	217	817	53	107	1	1,195

Table 4 Smolt Ages at Migration - Nets

Smolt Age / Sea Age	1-year	2-year	3-year
1+	-	214	3
2	8	803	6
2+	2	50	1
3	8	99	-
Sm	-	1	-
Total	18	1,167	10

Table 5 Monthly Catches of Salmon (from Table 1) corrected to show proportions of year classes, using percentage representations from Table 3 - Nets

Month \ Class	1+	2	2+	3	Sm	Total
February	-	61 (62.5)	-	37 (37.5)	-	98
March	-	378 (87.6)	-	54 (12.4)	-	432
April	-	542 (92.4)	-	45 (7.6)	-	587
May	-	588 (88.3)	20 (3.0)	58 (8.7)	-	666
June	153 (25.9)	359 (60.7)	30 (5.0)	47 (8.0)	2 (0.4)	591
July	451 (67.6)	96 (14.45)	96 (14.45)	24 (3.5)	-	667
August	193 (79.2)	10 (4.2)	41 (16.6)	-	-	244
Calculated Totals	797	2,034	187	265	2	3,285
%	24.2	61.9	5.7	8.1	0.1	100%

Fig.(1) Grilse (1+) - Nets - Weight Distribution

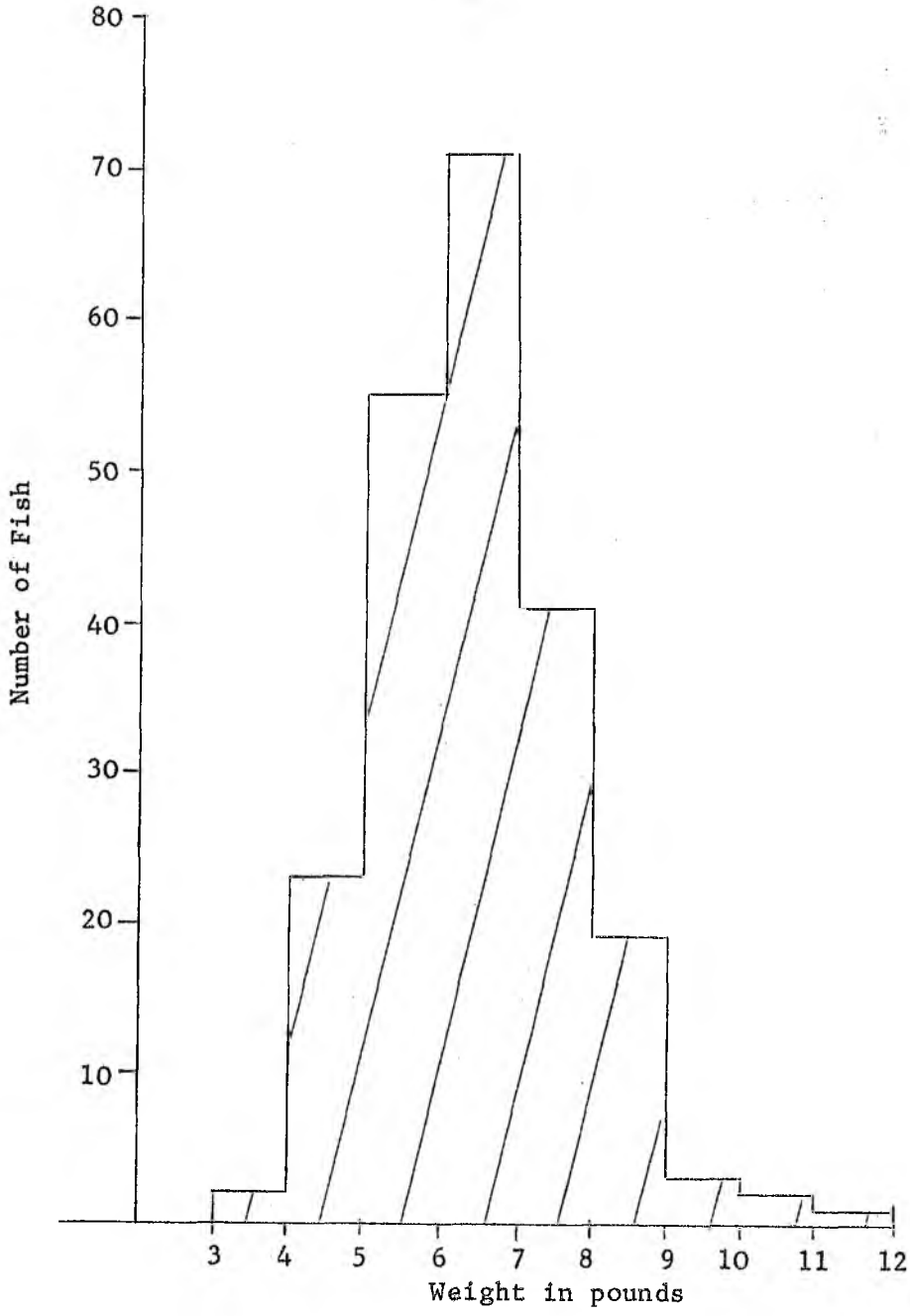

Fig.(2) Small Summer Fish (2+) - Nets - Weight Distribution

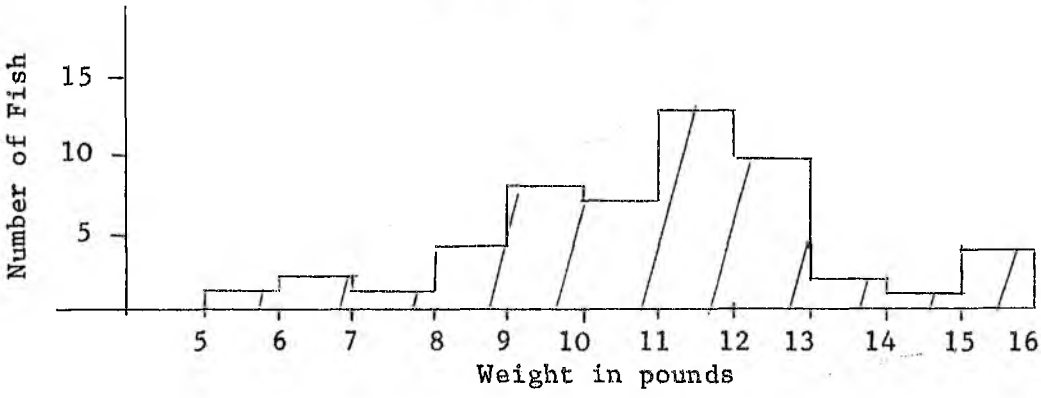

Fig.(3) Small Spring Fish (2) - Nets - Weight Distribution

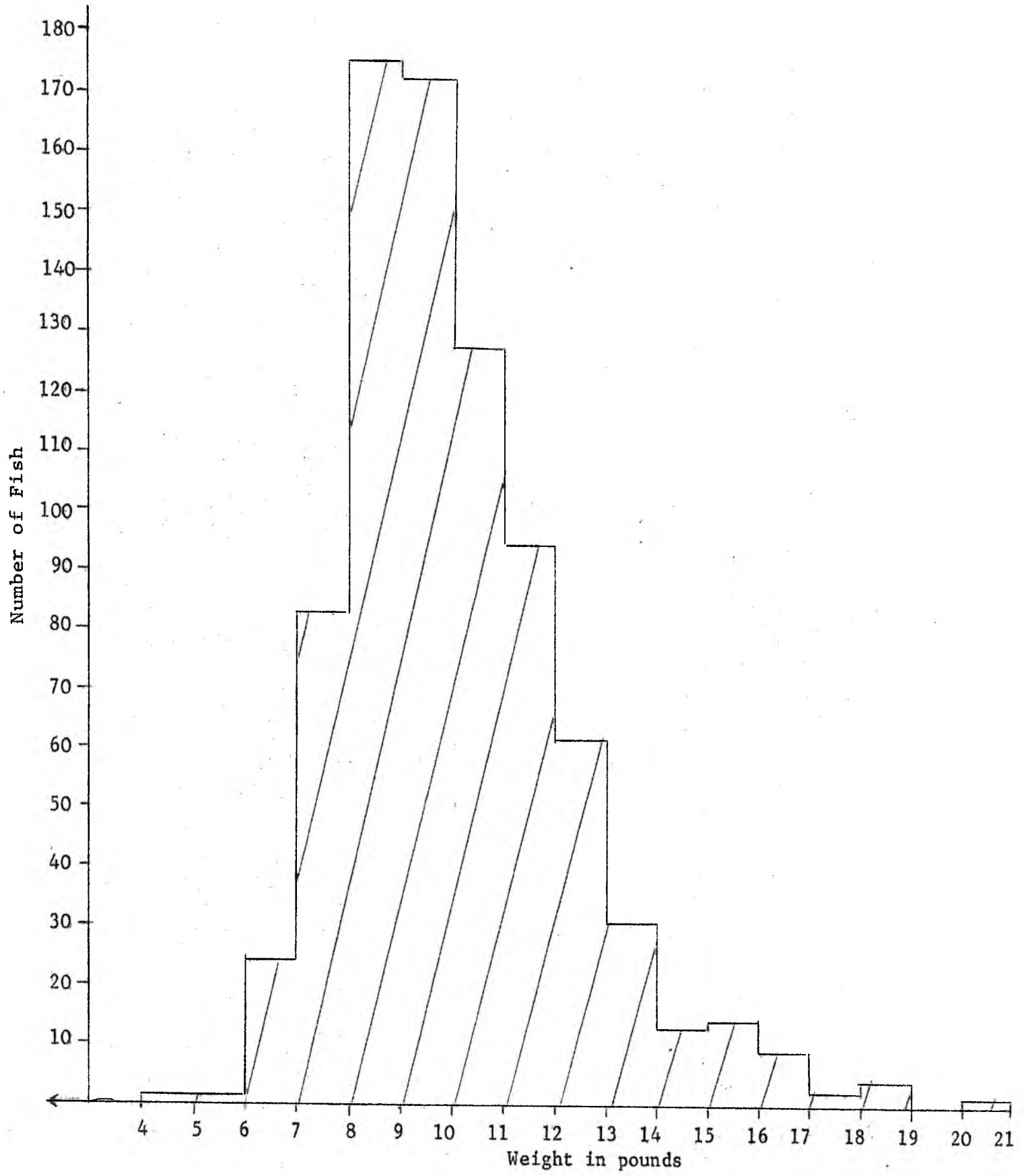

Fig.(4) Percentage Monthly Distribution of Sea-Age Classes - Nets